VIESMANN

VITOCROSSAL 200

Gas fired condensing boiler
87 to 311 kW

Datasheet

Part numbers and prices: see pricelist

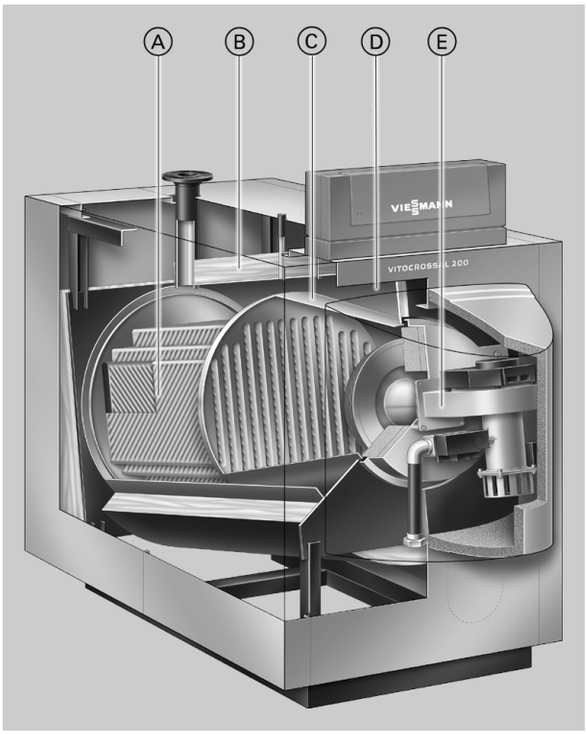
File in
Vitotec folder, register 23

VITOCROSSAL 200 Type CM2

Gas fired condensing boiler for natural gas E and LL
With modulating MatriX radiant burner

Benefits at a glance

- Condensing Unit with MatriX gas burner, 87 to 311 kW, as dual cascade up to 622 kW.
- Standard efficiency up to 108%.
- High operational reliability and a long service life through corrosion-resistant Inox-Crossal heating surface (1.4571).
- Inox-Crossal heating surface for highly effective heat transfer and high condensation rate.
- Self-cleaning effect through smooth stainless steel surface.
- Clean combustion through low combustion chamber load and its straight-through design.
- MatriX radiant burner up to 311 kW for environmentally-friendly operation, with a modulation range from 33 to 100%.
- Particularly quiet operation.
- Optional open or balanced flue operation.
- All water connections can be fitted from above.



Ⓐ Inox Crossal heating surface made from stainless steel

Ⓑ Highly effective thermal insulation

Ⓒ Water cooled stainless steel combustion chamber

Ⓓ Wide water galleries – good natural circulation

Ⓔ Modulating MatriX radiant burner

5822 346-1 GB

Specification – boiler

Specification

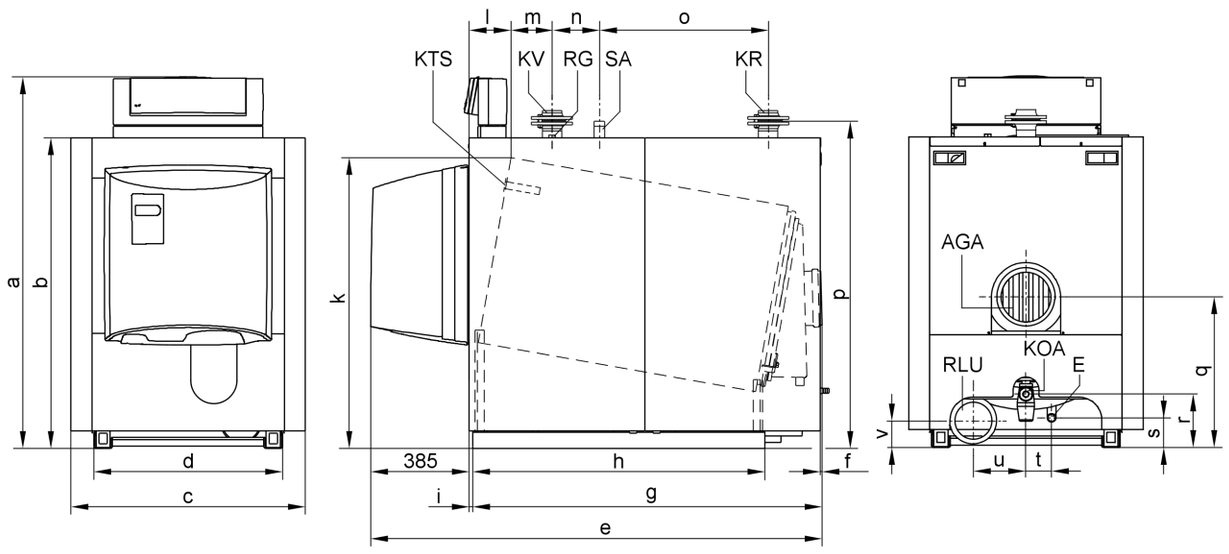
Rated output							
T_V/T_R = 50/30 °C	**kW**	**29-87**	**38-115**	**47-142**	**47-186**	**82-246**	**104-311**
T_V/T_R = 80/60 °C	**kW**	**27-80**	**35-105**	**43-130**	**43-170**	**75-225**	**95-285**
Rated thermal load	kW	27-82	36-108	45-134	44-175	77-232	98-293
Product ID		CE-0085 BQ 0021					
Permissible operating temperature	°C	100	100	100	100	100	100
Permissible flow temperature (= safety temperature)	°C	110	110	110	110	110	110
Permissible operating pressure	bar	4	4	4	4	4	4
Boiler body dimensions							
Length g*1	mm	1380	1380	1380	1440	1440	1440
Width d	mm	660	660	660	760	760	760
Height (incl. connectors) p	mm	1180	1180	1180	1275	1275	1275
Total dimensions							
Total length e	mm	1760	1760	1760	1790	1790	1790
Total width c	mm	815	815	815	915	915	915
Total height a	mm	1350	1350	1350	1450	1450	1450
Foundation							
Length	mm	1250	1250	1250	1250	1250	1250
Width	mm	800	800	800	800	800	800
Height	mm	100	100	100	100	100	100
Weight							
– Boiler body	kg	181	185	189	228	243	256
Total weight							
– Boiler with burner, thermal insulation and boiler control unit	kg	270	280	285	330	345	360
Content boiler water	litres	229	225	221	306	292	279
Boiler connections							
Boiler flow	PN 6 DN	50	50	50	65	65	65
Boiler return	PN 6 DN	50	50	50	65	65	65
Safety connection (safety valve)	R	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Drain	R	1"	1"	1"	1"	1"	1"
Condensate drain (siphon)	∅mm	20	20	20	20	20	20
Flue gas parameters*2							
Temperature (at return temperature 30 ºC)							
– at rated output	°C	45	45	45	45	45	45
– for partial load	°C	35	35	35	35	35	35
Temperature (at return temperature 60 ºC)	°C	75	75	75	75	75	75
Mass flow rate (for natural gas)							
– at rated output	kg/h	127	166	205	269	356	451
– for partial load	kg/h	42	55	69	90	119	150
Available draught	Pa	70	70	70	70	70	70
to the flue outlet*3	mbar	0.7	0.7	0.7	0.7	0.7	0.7
Flue gas connection	∅ mm	150	150	150	200	200	200
Standard efficiency							
at heating system temp. 40/30 °C	%	108	108	108	108	108	108
at heating system temp. 75/60 °C	%	106	106	106	106	106	106
Standby loss $q_{b,70}$	%	0.6	0.6	0.5	0.5	0.4	0.4

*1 *Without MatriX radiant burner.*

*2 *Calculating values for sizing the flue gas system to EN 13384, based on 10 % CO_2 for natural gas.*
Flue gas temperatures measured as gross values at 20 °C combustion air temperature.
The details for partial load refer to 33 % of rated output. Calculate the flue gas mass flow rate accordingly when the partial load differs from that stated above (subject to burner mode).

*3 *When using the Vitocrossal 200 with moisture-resistant stacks, the draught may be max. 0 Pa.*

Specification – boiler (cont.)



AGA Flue outlet
E Drain
KOA Condensate drain
KR Boiler return
KTS Boiler water temperature sensor
KV Boiler flow
RG Fem. connection R½" for additional control equipment (e.g. minimum pressure switch)
RLU Air supply connection ∅ 150 mm for balanced flue operation (accessories)
SA Safety connection (safety valve)

Dimensions

Rated output	**kW**	**87**	**115**	**142**	**186**	**246**	**311**
a	mm	1350	1350	1350	1450	1450	1450
b	mm	1114	1114	1114	1212	1212	1212
c	mm	815	815	815	915	915	915
d	mm	660	660	660	760	760	760
e	mm	1760	1760	1760	1790	1790	1790
f (flue pipe projection at the back)	mm	4	4	4	32	32	32
g	mm	1380	1380	1380	1440	1440	1440
h (foot length)	mm	1142	1142	1142	1142	1142	1142
i (distance from the front edge of the thermal insulation to the foot)	mm	25	25	25	14	14	14
k	mm	1060	1060	1060	1160	1160	1160
l (distance from the front edge of the thermal insulation to the top of the boiler body)	mm	144	144	144	151	151	151
m	mm	173	173	173	173	173	173
n	mm	185	185	185	185	185	185
o	mm	660	660	660	660	660	660
p	mm	1180	1180	1180	1275	1275	1275
q	mm	540	540	540	590	590	590
r	mm	220	220	220	205	205	205
s	mm	115	115	115	115	115	115
t	mm	100	100	100	100	100	100
u	mm	157	157	157	207	207	207
v	mm	106	106	106	106	106	106

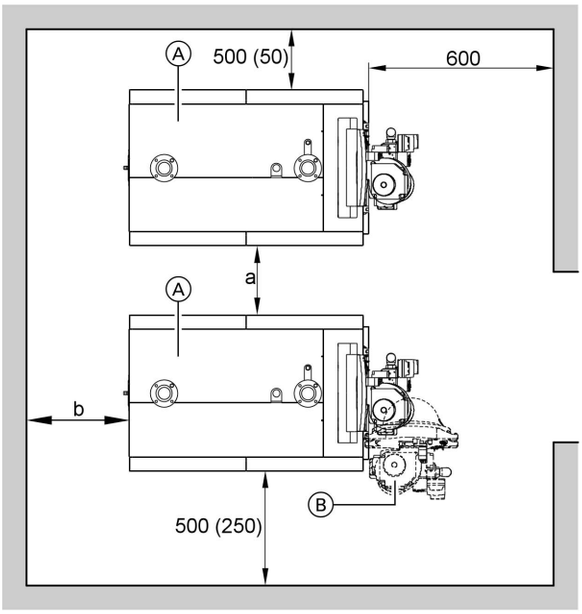
The flue gas collector can be removed, if access to the boiler room is restricted.

5822 346-1 GB

Specification – boiler (cont.)

Positioning

Minimum clearances



To enable a convenient installation and maintenance, observe the stated clearance dimensions; you must maintain the minimum clearances where space is tight (dimensions in brackets). In the delivered condition, the boiler door opens to the l.h. side. You can reposition the hinge brackets so that the door can open to the r.h. side.

	Recommended clearance excl. accessories	In case of flue gas header (accessories) for two-boiler systems	
Dim. a	500 mm	min. 0 mm	max. 285 mm
Dim. b	400 mm	min. 600 mm	—

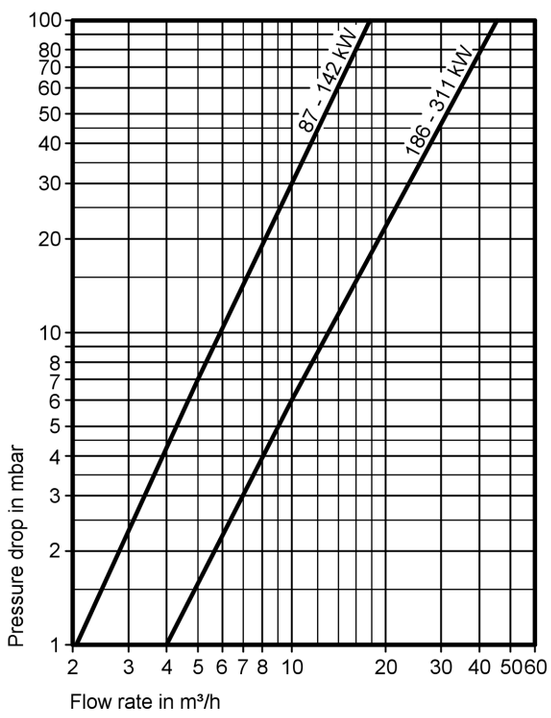
Ⓐ Boiler
Ⓑ Burner

Positioning
- Avoid air contamination by halogenated hydrocarbons (e.g. as in sprays, paints, solvents and cleaning agents)
- Avoid very dusty conditions
- Avoid high levels of humidity
- Protect against frost and ensure good ventilation,

otherwise the system may suffer faults and damage.
In rooms where air contamination from **halogenated hydrocarbons** is to be expected, operate the boiler only in balanced flue mode.

Specification – boiler (cont.)

Pressure drop (primary side)

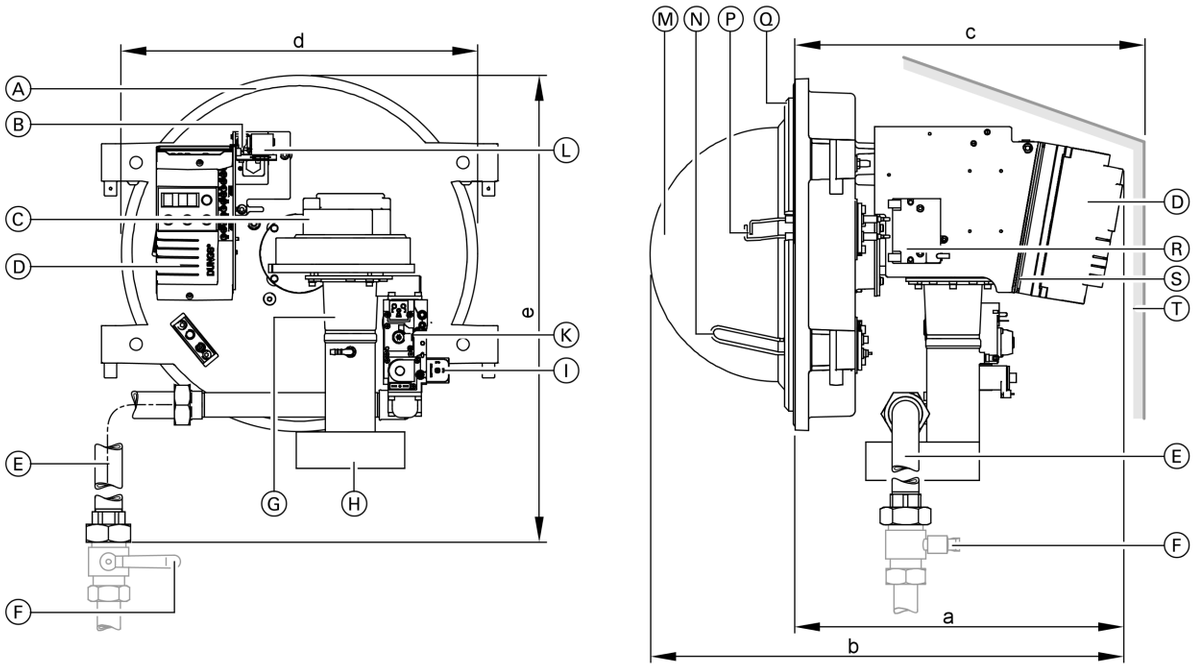


The Vitocrossal 200 is only suitable for fully pumped hot water heating systems.

Specification – MatriX radiant burner

Specification

Rated boiler output T_V/T_R 50/30 °C	kW	87	115	142	186	246	311
Burner output, lower/upper*1	kW	27/82	36/108	45/134	44/175	77/232	98/293
Burner type		VMA III-1	VMA III-2	VMA III-3	VMA III-4	VMA III-5	VMA III-6
Product ID		see boiler					
Voltage	V	230	230	230	230	230	230
Frequency	Hz	50	50	50	50	50	50
Power consumption							
for upper rated output	W	75	140	185	270	330	385
for lower rated output	W	25	40	45	45	50	55
Version		modulating					
Dimensions							
Length a	mm	450	450	450	450	450	450
Total length b	mm	595	595	595	595	595	595
Length with burner hood c	mm	510	510	510	510	510	510
Width d	mm	550	550	550	550	550	550
Height e	mm	480	480	480	480	480	480
Weight Burner with gas train and burner hood	kg	27.5	32	32.5	33	33.5	35.5
Gas supply pressure	mbar	20	20	20	20	20	20
Gas connection	R	1"	1"	1"	1"	1¼"	1¼"
Connection values*2 relative to the max. load							
Gas: H_{uB}:							
Natural gas E 9.45 kWh/m^3 34.02 MJ/m^3	m^3/h	2.8–8.7	3.8–11.5	4.7–14.2	4.6–18.6	8.1–24.6	10.3–31.0
Natural gas LL 8.13 kWh/m^3 29.25 MJ/m^3	m^3/h	3.3–10.1	4.4–13.3	5.5–16.5	5.4–21.5	9.4–28.6	12.0–36.1



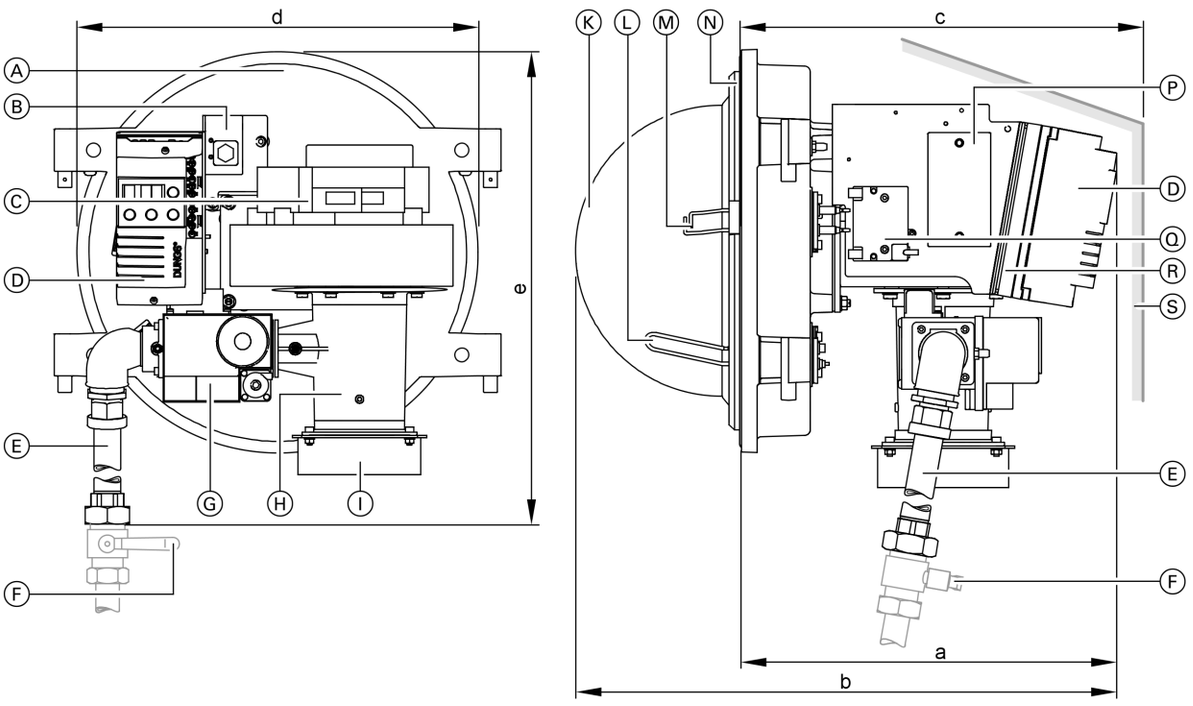
MatriX radiant burner up to 87 kW

Ⓐ Boiler door
Ⓑ Air pressure switch
Ⓒ Fan
Ⓓ Display and programming unit

*1 *Corresponds to the rated thermal load of the boiler.*
*2 *H_{uB} relative to 1013 mbar and 15 °C gas temperature.*

Specification – MatriX radiant burner (cont.)

Ⓔ Gas supply pipe
Ⓕ Gas shut-off valve
Ⓖ Venturi mixing pipe
Ⓗ Inlet adaptor for balanced flue operation (option)
Ⓘ Gas pressure switch
Ⓚ Gas combination valve
Ⓛ Choke valve
Ⓜ Burner gauze
Ⓝ Ionisation electrode
Ⓟ Ignition electrodes
Ⓠ Thermal insulation block
Ⓡ Ignition unit
Ⓢ Burner control unit
Ⓣ Burner hood



MatriX radiant burner 115 kW to 311 kW

Ⓐ Boiler door
Ⓑ Air pressure switch
Ⓒ Fan
Ⓓ Display and programming unit
Ⓔ Gas supply pipe
Ⓕ Gas shut-off valve
Ⓖ Gas combination valve
Ⓗ Venturi mixing pipe
Ⓘ Inlet adaptor for balanced flue operation (option for 115, 142 and 186 kW)
Ⓚ Burner gauze
Ⓛ Ionisation electrode
Ⓜ Ignition electrodes
Ⓝ Thermal insulation block
Ⓟ Suppressor box
Ⓠ Ignition unit
Ⓡ Burner control unit
Ⓢ Burner hood

Not shown: choke valve for 142 and 186 kW and rotary valve damper for 246 and 311 kW

Delivered condition

Boiler body with fitted mating flanges and gaskets to all connectors and fitted protective crate, plus flue gas header.

1 Carton with thermal insulation
1 Carton with MatriX radiant burner
1 Carton containing the boiler control unit and 1 bag with technical documentation
1 Product pack (boiler coding card and technical documentation)

5822 346-1 GB

Delivered condition (cont.)

Control unit versions

For single boiler systems:

- without Vitocontrol control panel
  Vitotronic 100 (type GC1)
  for operation with a constant boiler water temperature or for weather-compensated operation in conjunction with a control panel (see below) or an external control unit.
  Vitotronic 200 (type GW1)
  for modulating boiler water temperature
  without mixer control
  Vitotronic 300 (type GW2)
  for modulating boiler water temperature
  with mixer control for up to two heating circuits with mixer
- with Vitocontrol control panel
  Vitotronic 100 (type GC1) **and LON module** (accessories)
  and
  Vitocontrol control panel with Vitotronic 333 (type MW1S) for weather-compensated operation and mixer control for up to 2 heating circuits with mixer and additional Vitotronic 050, type HK1S or HK3S for 1 or up to 3 heating circuits with mixer
  or
  Control panel with external control unit (on site)

For multi-boiler systems:
(up to 4 boilers)

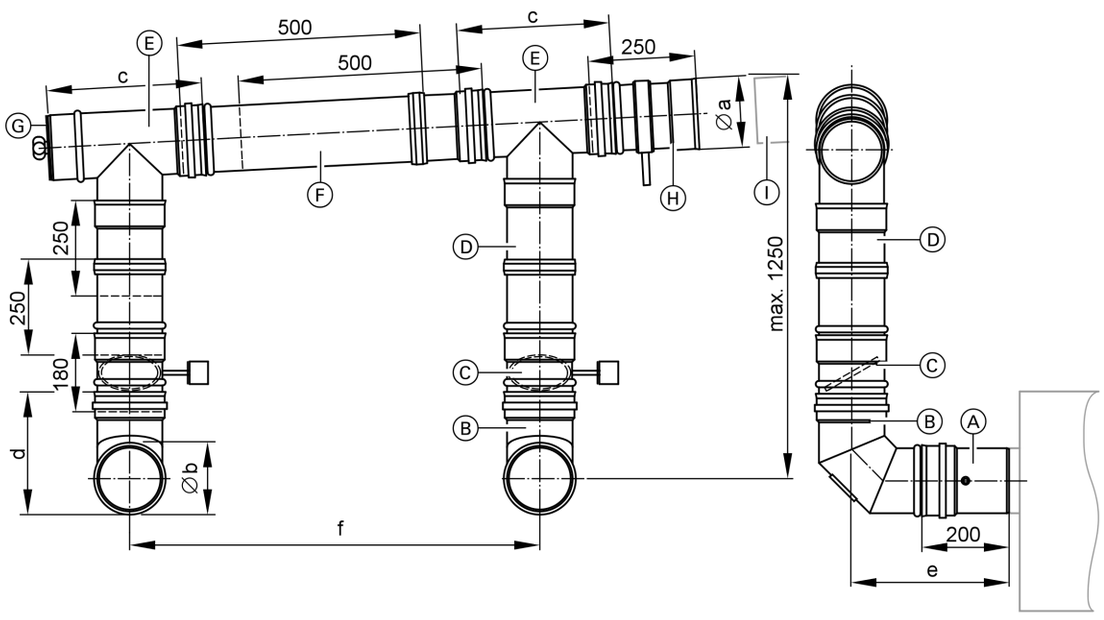
- without Vitocontrol control panel
  Vitotronic 100 (type GC1) **and LON module in conjunction with a Vitotronic 333** (type MW1)
  for modulating boiler water temperature (one boiler is supplied with the basic controls for a multi-boiler system)
  and
  Vitotronic 100 (type GC1) **and LON module** for modulating boiler water temperature
  for each additional boiler in a multi-boiler system
- with Vitocontrol control panel
  Vitotronic 100 (type GC1) **and LON module**
  for modulating boiler water temperature
  for each boiler in a multi-boiler system
  and
  Vitocontrol control panel with a Vitotronic 333 (type MW1S) for weather-compensated operation and mixer control for a max. of 2 heating circuits with mixer and additional Vitotronic 050, type HK1S or HK3S for 1 or up to 3 heating circuits with mixer
  or
  Control panel with external control unit (on site)

Boiler accessories

Stainless steel flue gas header for two-boiler system

Connection to the flue gas system, optional outlet on the l.h. or r.h. side.

Example: (outlet on the r.h. side)



Ⓐ Boiler flue outlet with test port and flue gas temperature sensor (accessories)
Ⓑ Flue pipe bend with inspection aperture
Ⓒ Sealing motorised flue gas damper
Ⓓ Sliding element, 250 mm
Ⓔ Tee connector
Ⓕ Sliding element, 500 mm
Ⓖ Inspection cover
Ⓗ Flue pipe with condensate drain (½")
Ⓘ Flue gas system

5822 346-1 GB

Boiler accessories (cont.)

Dimensions

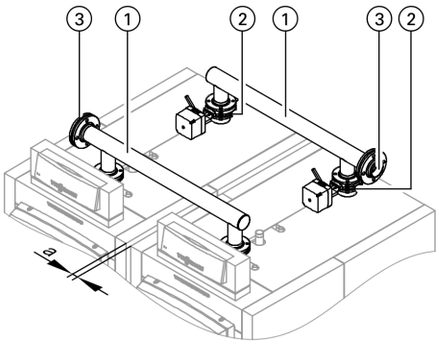
Internal diameter	mm	200	250	300
a	mm	200	250	300
b	mm	150	200	200
c	mm	350	400	400
d	mm	279	328	328
e	mm	333	368	368
f	mm	820	860	860
f max.	mm	1130	1220	1220

Selection table for the max. draught 70 Pa

Rated output (kW)	Diameter of the effective vertical flue pipe up to 30 metres (in mm)
87, 115, 142	∅ 200
186, 246	∅ 250
311	∅ 300

Use a flue pipe with the same diameter as that of the flue gas header.

Hydraulic system pipework for two-boiler system



① Flow and return manifold
② Motorised butterfly valves
③ Mating flanges with gaskets

Dim. a: 35 mm (boiler clearance with fitted thermal insulation)

Rated output in kW		Internal diameter
Single boiler	Dual-boiler system	
87	174	
115	230	DN 50/65
142	284	
186	372	
246	492	DN 65/80
311	622	

Additional accessories

See pricelist and "Boiler accessories" datasheet.

Operating conditions

For water quality requirements, see the technical guide "Standard values for water quality"

		Requirements
1.	Heating water volume flow	None
2.	Boiler return temperature (minimum value)	None
3.	Lower boiler water temperature	None
4.	Reduced mode	None – total reduction is possible
5.	Weekend setback	None – total reduction is possible

Design information

Neutralisation

During condensation an acidic condensate with a pH value of between 3 and 4 is produced. This condensate can be neutralised by processing it through a neutralising system.
For further information, see the technical guide and "Boiler accessories" datasheet.

5822 346-1 GB

Design information (cont.)

Burner adjustment

MatriX radiant burner tested at operating temperature and adjusted in the factory.

For further information on design,

see the technical guide of this boiler.

Tested quality

CE designation according to current EC Directives.

Printed on environmentally friendly chlorine-free bleached paper

Subject to technical modifications

Viessmann Werke GmbH&Co KG
D-35107 Allendorf
Telefon: +49 6452 70-0
Telefax: +49 6452 70-2780
www.viessmann.com

Viessmann Limited
Hortonwood 30, Telford
Shropshire, TF1 7YP, GB
Telephone: +44 1952 675000
Fax: +44 1952 675040
E-mail: info-uk@viessmann.com

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